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A METHOD FOR THE EXAMINATION OF HIBERNATING INSECTS IN COCOONS AND WEBBING

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The writer has developed a method for the examination of cocoons and webbing containing hibernating larvae of the raisin moth (Ephestia figulilella Greg.) and the Indian-meal moth (Plodia interpunctella Hbn.) which is rapid and allows for the determination of the species represented and of the status of the insects present; that is, whether alive, dead, paralyzed by parasites, or pupated.

Since many other species of insects spend a portion of the annual cycle in cocoons and webbing, this method may be of value in studies thereof.

Method

Samples of webbing containing hibernating larvae are fragmented by hand and given a thorough shaking in a corn-popper separator** provided with 16-mesh screen in order to remove the fine dust and yet retain the insects and webbing.

This cleaned material is placed in a beaker, covered with 10-percent potassium hydroxide solution, and warmed on an electric hot plate with constant stirring for from 3 to 6 minutes. The webbing is completely dissolved away, leaving the insect stages intact, and those previously dead are distinguishable on sight from those that were living prior to the treatment. The cocoons of certain ichneumonid parasites are not dissolved by this rapid method.

The time required to dissolve the webbing depends on the quantity of material being handled. In no case is the solution heated to boiling. As soon as the webbing is dissolved away the material is emptied into a wide-mouthed, mason-type jar provided with a 16-mesh screen-top lid and given a thorough washing under a water faucet.

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* The writer is indebted to Mr. H. G. Bedford, Chemist, Dried Fruit Association of California, for first suggesting the trial of potassium hydroxide which led to the use of this method.

** Donohoe, Heber C. A covered sifter for separating insects from host material. ET-53, May 1935.

The remaining material is then emptied into a flat, white, enameled pan containing about one-half inch of water, from which the insects can readily be removed for the purpose of recording their species and status.

By means of the foregoing procedure it is possible to make studies of populations and of progressive mortality during hibernation on a larger scale and more accurately than by the previous laborious and inaccurate method of tearing apart and examining the cocoons individually.

The method is not effective in the case of webbing and cocoons of the pyralid Aphomia gularis Zell., a pest of stored prunes in the San Francisco Bay district of California. Even after 48 hours' treatment, including heating to boiling and several changes of solution, the material is only partially dissolved, whereas the contained insects are no longer recognizable.